

# CONSERVATION PRIORITIES FOR THE ANDAMAN ISLANDS

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A survey was conducted in the Andaman Islands to look at the distributional patterns of forest birds and butterflies. These two taxa were used as indicators to see what type of reserves would best conserve the biodiversity. This study showed that forests on large islands and undisturbed evergreen forests are important reservoirs of biodiversity in the Andaman islands.

## INTRODUCTION

The Andaman and Nicobar chain of islands lying in the Bay of Bengal between 6° 45' N and 13° 41' N latitude have a rich and varied biota, both terrestrial and marine. These unique ecosystems are under increasing pressure from human activities (see Saldanha 1989, Whitaker 1985), and unless protected, will be decimated rapidly. More than a hundred protected areas, namely Sanctuaries and National Parks have been earmarked in the Andaman and Nicobar islands (Pande *et al.* 1991). Although this sounds impressive, their importance for the conservation of biodiversity needs to be examined (Davidar *et al.* 1995).

In order to see where and what type of reserves are needed to protect the terrestrial biota, a rapid assessment was conducted in the Andaman group of islands using two taxa, forest birds and butterflies. Forty seven species of forest birds were selected using Ali and Ripley (1987) and from field observations. These were surveyed on 45 islands and butterflies on 25 islands. This was not meant to be precise or exhaustive, but to give a quick and approximate estimate of species and their distributional patterns. Most of the results of this study have been published or are under publication (Davidar *et al.* 1995, Davidar *et al.* in press, Devy *et al.* in press). In addition to this, general information gleaned from many field trips gave a good grasp of what should be the focus of conservation efforts.

## STUDY SITE

The Andaman chain of islands, about 6000 km<sup>2</sup>

in area, are considered to be a continuation of the Arakan Yoma chain of Myanmar. It is separated from the Nicobar group of islands by the 10 degree channel. These islands are considered to be truly oceanic as they were never completely separated from the continent during the Pleistocene glaciation (Ripley and Beehler 1989). Most of the land mass is made up of large continuous islands such as North, Middle, Baratang, South and Rutland islands. The Little Andamans, another large island lies about 67 km south. This large island mass is surrounded by smaller islands and archipelagos. Human colonisation of the Andamans has been limited by water. The climate is tropical and oceanic with rainfall from both the SW and NE monsoon winds. There is a climatic gradient from the North to the Little Andamans with the north having a drier and more seasonal climate. Thus the North Andamans have predominantly drier forests whereas the South Andamans have more evergreen forests, (Davidar *et al.* 1995).

## METHODS

The surveys were carried out in the dry seasons of 1992, 1993 and 1994. A total of 45 islands were surveyed for forest birds and 25 for butterflies. The survey covered the North Andaman islands and islands surrounding it, Baratang Island, Ritchie's archipelago and other islands off the Middle Andamans. The South Andamans and Labrinyth archipelago, Rutland and the Little Andaman Island. Different sites and vegetation types were selected on the large islands whereas the smaller islands were completely surveyed. Transects were selected in a site on an island. The vegetation types were noted. Forest birds seen or heard along the transect were

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recorded between 0700 h and 1000 h. Transects were walked separately for butterflies and species seen 5 m on either side of the transect were recorded. For more detailed methodology see Davidar *et al.* 1995. The sampling was repeated in each site for several days until no new species were recorded.

## RESULTS AND DISCUSSION

**Importance of Forests on large islands:** This survey clearly showed that forests on large islands are very important in the conservation of biodiversity. All the 47 species of forest birds and 57 species of butterflies (out of a total of 65 species recorded in this survey) were recorded on islands larger than 30 km<sup>2</sup> in area. Islands smaller than 1 km<sup>2</sup> had records of 36 species of forest birds and 39 species of butterflies. On islands less than 0.1 km<sup>2</sup> in area, only 20 species of forest birds and 21 species of butterflies were recorded.

Of the forest birds recorded, *Coracina striata*, *Chrysococcyx xanthorhynchus*, *Oriolus xanthornus* and *Terpsiphone paradisi* were not recorded on islands smaller than 30 km<sup>2</sup> (Davidar *et al.* 1995). This non random distribution of forest birds suggests that small islands, however numerous, are not equivalent to large islands for the conservation of biodiversity.

However, 58 of the reserves in the protected area network are smaller than 1 km<sup>2</sup> and of these 13 are less than 0.1 km<sup>2</sup> in area (Pande *et al.* 1991). Only 4 of the reserves are larger than 30 km<sup>2</sup>. As forests on large islands are not adequately represented in the current protected area network, it is important that remaining patches of primary forests on large islands are protected on a priority basis. These patches should be large enough to include the vegetational and habitat diversity and adequate numbers of the rarer species.

**Importance of wet evergreen forests:** The study shows that many of the butterfly species recorded, for which adequate data exists, were recorded only in evergreen forests (Devy *et al.* in press). Of the 65 species of butterflies recorded, 25 appear to be habitat specialists, and of these 10 were

evergreen forest specialists. The presence of evergreen forests on an island significantly increases its butterfly diversity (Devy *et al.* in press). Islands off the main North Andaman island which have deciduous forests have fewer species of butterflies than islands of equivalent sizes off the South Andaman island with evergreen forest. While this could be a seasonal phenomenon, it is well known that many tropical butterfly species are habitat specialists and many are adapted to tropical wet forests and the loss of these forests will result in the extinction of many species (see Devy *et al.* in press). The primary wet evergreen forests of the Andaman islands are being destroyed and degraded at an alarming rate by forestry operations and encroachments. These forests should be protected on a priority basis.

**Unique species:** Species such as the Narcondam Hornbill (*Aceros narcondami*) which are found only on Narcondam island, and the Andaman teal (*Anas gibberifrons*) which depend on transient water bodies deserve particular attention. The Narcondam Hornbill enjoys protection, and the ecological requirements of the teal need to be studied and certain areas set aside for its protection. Likewise too for unique species of plants, invertebrates, reptiles, amphibians, etc.

**Management Issues:** As there is a north-south vegetational gradient, reserves should ideally be located along this gradient. Reserves should also be of sufficient size to include the habitat and vegetational mosaic.

The North Andamans has the Saddle Peak National Park which has stunted evergreen forest. However, this Park is poorly managed, with intense grazing pressure from domestic animals and encroachments. The Kalpong Hydel project in the North Andamans will further reduce the extent of evergreen forest by submersion (Ellis 1989). The Jarawa tribal reserve which covers a fairly large area in the Middle and South Andamans acts as a de facto protected area. However, the survival of the forests and the tribals are increasingly under threat from illegal logging and encroachments. This area

should be strictly protected from external threats.

There are no protected areas on Ritchie's archipelago, where primary forests are found in inaccessible areas of Havelock and on small islands such as Wilson. Forests on the other large islands such as Peel, John Lawrence and Henry Lawrence are mostly degraded. Therefore, the primary evergreen forests still remaining in the Ritchie's archipelago should be protected.

Evergreen forests in the South Andamans are protected in Mt. Harriet and the Wandoor Marine National Park, which has many forested islands. Rutland is heavily deforested, but areas of forest still remain which can be protected.

The Little Andamans is a large and isolated island. Its geographic isolation accelerates speciation processes and also makes the species more vulnerable to extinction. A large area of primary forest can be declared a National Park and in this Centenary year of Dr. Sálim Ali, can be named after him. It will be a fitting tribute to him. Protecting large areas of forest on the large islands will be adequate to conserve the vegetational mosaic and species diversity. The other problem is the management and protection of these reserves under difficult field conditions. Even professional ecologists often find it difficult to do extensive field work, and one cannot expect the less motivated forest staff to work miracles. While small, isolated islands are naturally protected, it will be difficult to protect forests on the large islands. Infrastructural facilities, staff and equipment are needed to protect these reserves. Imaginative and well regulated ecotourism could be a potential source of revenue and tribals such as the Onges

could play an important role in reserve management.

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While preparing this manuscript for the Sálim Ali Centenary issue of the Journal of the Bombay Natural History Society, I found a letter from Dr. Sálim Ali from which this excerpt is taken. It was with regard to participation in a symposium held in November 1977. It summarises his expectations of his students and the high standards he set for them.

'Yes, I do expect you to have something ready for the Symposium that does not let you or me down. All who are or have been my students, or whose interest in birds has been influenced in any degree by my work, are expected to participate actively. I shall be disappointed if you do not present something, and am rash enough to believe that what you do present will be worthwhile.'

This paper is dedicated to the memory of Dr. Sálim Ali, teacher and guide. His dedication and professionalism, kindness and humour will never be forgotten.

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